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LABORATORY QUALITY ASSURANCE PROJECT PLAN FOR ANALYSIS OF HANFORD SITE SAMPLES

QAP: 04-90-0011

ANALYTICAL CHEMISTRY DEPARTMENT
TECHNICAL DIVISION

Martin Marietta Energy Systems, Inc

QAP: 04-90-0011

LABORATORY QUALITY ASSURANCE PROJECT PLAN FOR ANALYSIS OF HANFORD SITE SAMPLES

Approvals:

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C.R. Kirkpatrick, Project Manager — 11/5/90 Date

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TABLE OF CONTENTS

ACRONYMS

ACD -	Analytical Chemistry Department
QAP -	Quality Assurance Program
QA -	Quality Assurance
QC -	Quality Control
SOP -	Standard Operating Procedure
SOW -	Statement of Work
CLP -	Contract Laboratory Protocol issued by EPA
PM -	Program Manager
WHC-OSM -	Westinghouse Hanford Company, Office of Sample Management
WDOE -	Washington State Department of Ecology
EPA -	Environmental Protection Agency

COMPARISON OF SW-846, 7/90 TO NQA-1

QA Parameters Addressed in the Following Protocol SW-846, 7/90	NQA-1
1. Title Page	6. Document Control
2. Table of Contents	6. Document Control
3. Project Description	2. Quality Assurance Program
4. Project Organization	1. Organization
5. QA Objectives	3. Design Control
6. Sampling Procedures	3. Design Control 13. Handling, Storage, and Shipping
7. Sample Custody	8. Identification and Control of Items
8. Calibration Procedures	12. Control of Measuring and Test Equipment
9. Analytical Procedures	9. Control of Processes 5. Instructions, Procedures and Drawings
10. Data Reduction/Validation/Reporting	3. Design Control
11. Internal QC	3. Design Control 11. Test Control
12. Performance/Systems Audits	18. Audits
13. Preventive Maintenance	12. Control of Measuring and Test Equipment
14. Data Assessment	3. Design Control 17. Quality Assurance Records
15. Corrective Action	16. Corrective Actions
16. QA Reports	2. Quality Assurance Program 6. Document Control

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Title: Laboratory Quality Assurance Project Plan for Analysis of Hanford Site Samples

0.0 INTRODUCTION

This document is formatted per the Outline of Mandatory and Recommended QA Practices, Chapter One of SW-846, dated July 1990.

The mission of the laboratory in waste characterization and environmental analysis is to provide high quality measurements and data that fulfill the needs of the customer by meeting defined standards of quality. This involves all types of waste and environmental analyses including low level radioactive samples. Data quality objectives are defined by:

(1) Standards specified by the customer
(2) Standards specified by QAP:04-90-0001
(3) Standards which meet the requirement of NQA-1
(4) Standards specified by regulatory procedures
(5) Standards specified by Chapter One, SW-846

1.0 PROJECT DESCRIPTION

This project plan is specifically for the analysis of samples from the Hanford Site and covers all elements associated with the receiving, the actual analysis, report preparation, reporting, etc. This work plan is formatted per the "Outline of Mandatory and Recommended QA Practices, Chapter One, SW-846 dated July 1990 and is based on the draft Statement of Work from WHC-OSM.

This task involves the analysis of RCRA chemical samples for the purpose of characterization in accordance with the requirements of EPA, DOE, and the State of Washington. The task begins with the receipt of samples and encompasses all phases of analysis, data reporting and salvaging of the samples. Both organic and inorganic analyses are required.

The purpose of this document is to provide a summary of each of the activities of the laboratory as they apply to the measurement of waste or environmental samples and the reporting of data to the customer.

2.0 PROJECT ORGANIZATION

2.1 Organization

This plan is organized within the QAP:04-90-0001, Quality Assurance Plan for ACD and incorporates individual SOP's for the operation of the laboratory. This plan is specific for samples from WHC-OSM.

The K-25 Plant Laboratory operates under the programmatic system with the Projest Manager being the main source of contact between the customer and analysis sections.

2.1.1 Organization Schematic

See Appendix A for organization schematic.

2.2 **Responsibilities**

2.2.1 Laboratory Director

The Lab Director has over responsibility for the operation of the laboratory including the analysis and the QA/QC functions.

2.2.2 Laboratory Methodology and QC Manager

The Laboratory Methodology and QC Manager has responsibility for the QA/QC associated with all the analysis, data reporting, response to audit findings, control charts, internal control programs, and Occurrence Reports (OR's).

2.2.3 Division Quality Assurance Specialist

The Division Quality Assurance Specialist (QAS) has the responsibility to administer the quality requirements as defined in this QA plan. The QAS shall have stop-work authority to suspend work where a significant condition adverse to quality cannot be satisfactorily resolved. Such stop-work authority is exercised through line management.

2.2.4 Project Manager

The Project Manager is the principle contact between the customers and the laboratory. The duties consist of the planning, estimating work schedules, requesting proper methodology, compliance with the DOE Orders and policies and the assurance that the customer requests are fulfilled.

2.2.5 Sample Management Leader

The Sample Management Leader is responsible for total sample management including the receiving of samples, entering sample data into AnaLIS, archiving samples, disposing of waste, reporting data to customers, and etc.

2.2.6 Laboratory Section Leaders

The Laboratory Section Leaders have the responsibility for supervision of group leaders, technicians, and chemist. They also ensure that the stated methodology is applied and the appropriate QC followed. They also furnish technical guidance for the analysis being performed.

2.2.7 Group Leaders

The Group Leaders provide direct supervision to laboratory personnel performing the analysis and provide technical assistance.

2.2.8 Chemists and Technicians

Chemists and technicians perform the actual analysis under the direction of group leaders and section leaders. This includes subsampling if required.

3.0 QUALITY ASSURANCE OBJECTIVES

3.1 Analytical Measurements

Perform analytical measurements on samples submitted by WHC-OSM using mandated procedures and protocol.

References: (1) Customer Statement of Work
(2) SW-846, Third Edition
(3) WDOE 83-13 Chemical Testing Methods, State of Washington

3.2 Data Control

To ensure that 99+% of the data requested are obtained and useable by the customer for evaluation of hazardous waste sites.

Reference:

Procedure 2302 Data Monitoring and Control Chart Plotting
Procedure 2303 Analytical Quality Control Implementation

3.3 Data Validation and Documentation

To ensure that the data are validated and have supporting documentation for possible litigation in a court of law.

Procedure 2309 Data Validation

3.4 Personnel Training and Qualification

All personnel shall be trained and qualified by individual procedure numbers prior to performing an analysis. Documentation of the training program and qualification records shall be maintained and available for review by customers or auditors. The AnaLIS system maintains the laboratory's qualification program which includes a running total of the number of analyses performed and prevents unqualified personnel from entering sample data into the data base.

Reference: Procedure 2205 Performance Based Training for Laboratory Personnel
Procedure 2337 Qualification of Personnel
Resumes' of Personnel - On file in Laboratory

4.0 SAMPLING PROCEDURES

The laboratory does not perform any sampling support for this specific work task, thus sampling procedures per se are not applicable.

The sampling procedures issued by the laboratory shall be limited to specifying the sample size and container required for each requested parameter. Preservation is required in the field.

The Sampling Department at the K-25 Site furnishes complete sampling, packaging, and shipment services upon request. All K-25 sampling personnel have been trained per OSHA and EPA requirements for hazardous waste site sampling.

5.0 SAMPLE CUSTODY

Sample custody begins upon receipt of the sample cooler or shipping container. The custody procedures meet or exceed the requirements for CLP or other EPA documents.

Each shipping container will be inspected and the contents verified upon receipt in the sample receiving area Per SOP 2332. This SOP requires that the contents be inspected, verified, and a cooler receipt form completed. This record will be FAXED to the originating agency.

The following SOP's cover the receipt, handling, surveying, tracking, and final disposition of the samples:

Procedure 2335 Obtaining Analytical Services
Procedure 2332, R-1, Cooler Receipt and Sample Tracking
Procedure 2053 Custodian Sampling, Handling, and Receiving
Procedure 2053B Radiological Surveying of Received Samples
Procedure 2055 Chain of Custody (Customer to receiving station)
Procedure 2331 Internal Chain of Custody and Priority of Analysis
Procedure 2051 Archiving Designated Samples
Procedure 2054A Disposal of Non-uranium Solid Waste and Samples
Procedure 2054B Disposal of Non-uranium Liquid Waste and Sample

6.0 CALIBRATION PROCEDURES

The general calibration procedures and the records maintained on the instruments are controlled by the following SOP's:

Procedure 2308 Calibration of Laboratory Equipment
Procedure 2323 Laboratory Notebook, Instrument Logbook & Miscellaneous logbook.

Each instrument is calibrated per the specific procedure requirements and in accordance with the manufacturer's operating manuals. These calibration records become a part of the QA file maintained for each batch of analyses performed.

The maintenance of the major instruments is by service contract with the manufacturers or approved service representatives. The manufacturer or approved service representative personnel perform calibration of the electronics and data handling verification for items not covered by the daily calibration or tuning checks performed per regulatory requirements.

7.0 ANALYTICAL PROCEDURES

The analytical procedures to be used shall be designated or approved by the customer prior to beginning the project work. The procedures shall be printed on the work card at the time the samples are logged-in. A copy of the procedure to be used shall be at the work station and the person performing the analysis is required to follow the designated procedure during the analyses. The procedures specified by the customer shall be those listed in:

a. SW-846,Third Edition, Test Method for Evaluating Solid Waste, US EPA
b. WDOE 83-13, Chemical Testing Methods, Washington Department of Ecology
c. Miscellaneous EPA published procedures.
d. ASTM
e. Standard Methods of Analysis for Water and Wastewater.

8.0 DATA REDUCTION/VALIDATION/REPORTING

The SOW must specify the level of data validation required and the reporting format.

Reference. Procedure 2309 Data Validation

Reporting methods available are:

a. Electronic transfer of the Sample Report Form
b. Data Package per SW-846, CLP, or WDOE 89-13
c. Electronic transfer by data fields
d. Electronic reporting of individual parameters after supervisory approval.

All data are reduced to the required reporting format either by AnaLIS, dedicated computers, or manual calculation prior to entry into the results field of AnaLIS. Supervisory approval of individual sample values is required prior to entry into the sample results.

All data are evaluated prior to supervisory approval. The level of validation, which includes manual checking of calculations,factors, calibration curves, spike recovery, and etc., is based on the contractual requirements with the customer. Specification limits where listed, QC requirements, spike recovery, replicate measurements, etc., are monitored by AnaLIS. An automatic electronic mail message is generated on all nonconformances and sent to appropriate personnel.

Reference: Procedure 2309 Data Validation

9.0 INTERNAL QC

Samples are "batched" for analysis and all data associated with the analysis is maintained in an identified "QA File Folder".

All GC/MS analyses are performed per the CLP protocol.

The internal QC applied to each analysis is per the requirements of the procedure if specified. In the absence of specified QC, the QC applied is per Procedure 2303 "Analytical Quality Control Implementation".

Several hundred control charts are maintained by AnaLIS. These include:

a. % Inorganic Spike Recovery
b. Replicate Measurements by parameter
c. Duplicate samples submitted from the field
d. Blanks-Trip blanks, field blanks, method blanks, rinsate blanks, etc.
e. Analytical Balance verification checks
f. Bench Standards analyzed with samples
g. Continuing Calibration Verification Standards
h. Matrix spike Recovery
i. Surrogate Spike Recovery
j. Replicate Results
k. Replicate Relative % Difference
l. Surrogate Plots

In addition to the above, internal QC consists of :

a. Traceability, preparation, and documentation of standards and critical reagents.
b. Determination of precision and bias for analyses.
c. Determination of Method Detection and Reporting Limits.
d. Sample receipt, holding times, scheduling, sample storage.
e. Equipment calibration, glassware cleaning.

10.0 PERFORMANCE/SYSTEMS AUDITS

The laboratory has a minimum of one internal audit per year. A specific project is selected and all phases of laboratory involvement is audited by laboratory personnel.

The Department of Energy conducts one or more audits or surveillances per year of the laboratory. These normally are activity related, for example, groundwater monitoring, NPDES monitoring, radiological monitoring, etc. Corrective actions are required and these responses are coordinated through the K-25 Plant QA office.

Outside agencies conducting audits are the EPA, State of Tennessee, American Industrial Hygiene Association, and customers.

11.0 PREVENTATIVE MAINTENANCE

The laboratory has its own assigned instrument group which furnishes computer support and repair service for minor instruments. There are service contracts with the manufacturers or approved service representatives for major items of instrumentation. These contracts are for both preventative maintenance and repairs upon call.

12.0 DATA ASSESSMENT

The laboratory provides only results to the customer, thus does not make an overall data assessment for the project. Conditions affecting the overall quality of the data, for example holding times, become part of the data reported to customers.

13.0 CORRECTIVE ACTIONS

AnaLIS provides for automatic monitoring of QC data and specification limits, if provided. Any nonconformance data results in an automatic mail message to appropriate personnel. These "Out-of-Control" conditions are handled per the following SOP:

Procedure 2314 Laboratory use of Control Data and Out-of-Control Documentation

14.0 QA REPORTS

The laboratory participates in the following external control programs and the reports from these programs are available upon request:

a. EMSL-LV - The QC program administered by the EPA Environmental Monitoring Scientific Laboratory, Las Vegas, NV for radionuclides in water and air filters.

b. WP - Water Pollution Performance Evaluation administered by the EPA Environmental Scientific Laboratory, Las Vegas, NV for several metals and inorganic contaminates in water.

c. WS - Water Supply Quality Control Program for laboratories certified to perform drinking water analysis. This is administered by EPA Cincinnati, OH and the evaluated data are supplied to the State.

d. EMi-QAP Environmental Monitoring Quality Assurance Program administered by the Environmental Measurements Laboratory, New York, NW for radionuclides in air filters, water, soil, vegetation, and animal tissue.

f. CLP - The Contract Laboratory Protocol QC performance evaluation sample analysis administered by EPA for laboratory approval for superfund sample analyses.

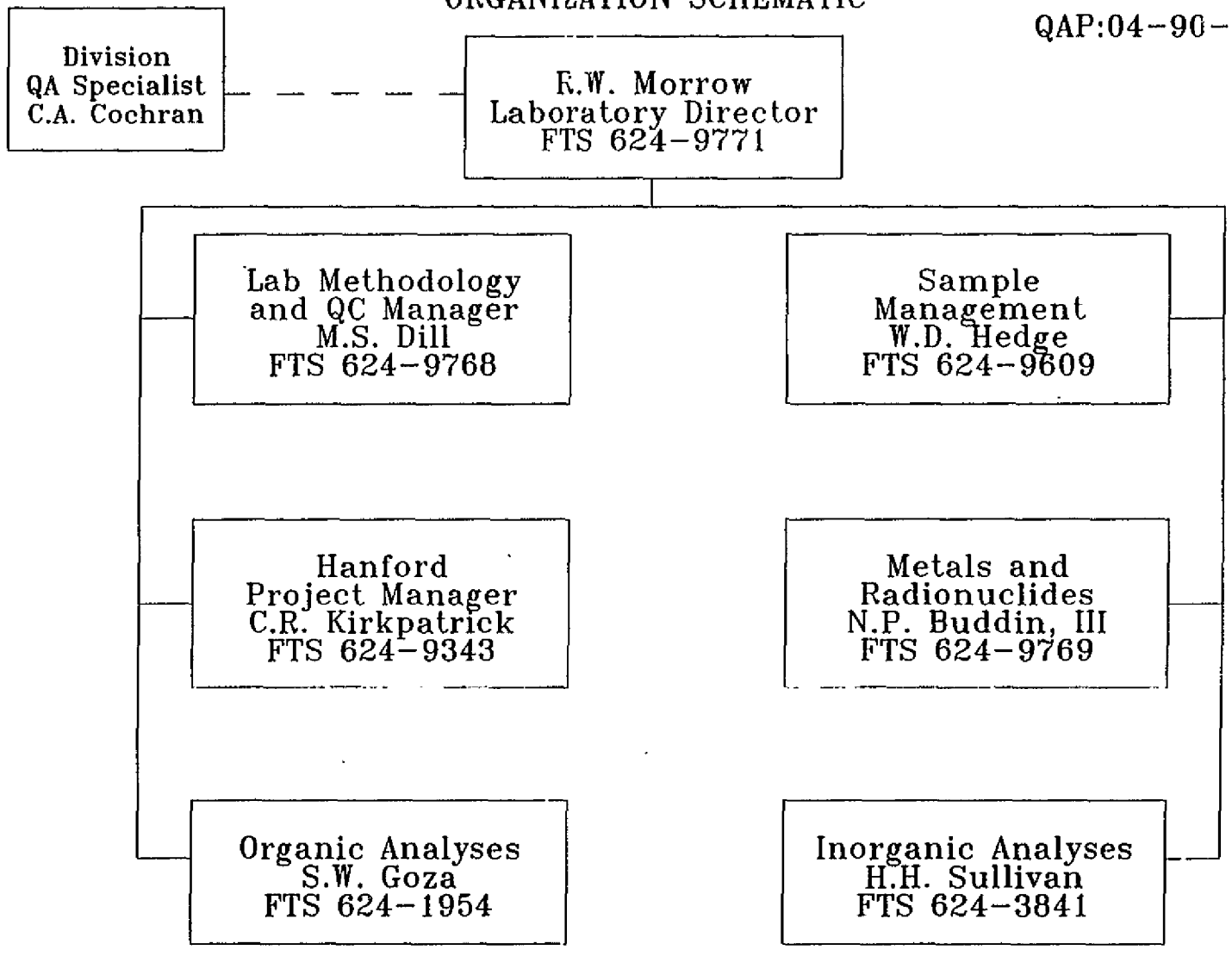
g. P.E.T. - Performance Evaluation Testing QC Program sold by Analytical Performance Products, Belpre, OH. This is a monthly QC program for over 45 parameters at two concentration levels in water.

h. P.A.T. - Proficiency Analytical Testing for labs certified by the American Industrial Hygiene Association.

Formal reports on the internal Lab QC will be issued only upon contractual requirements.

ORGANIZATION SCHEMATIC

QAP:04-90-0011



Appendix A